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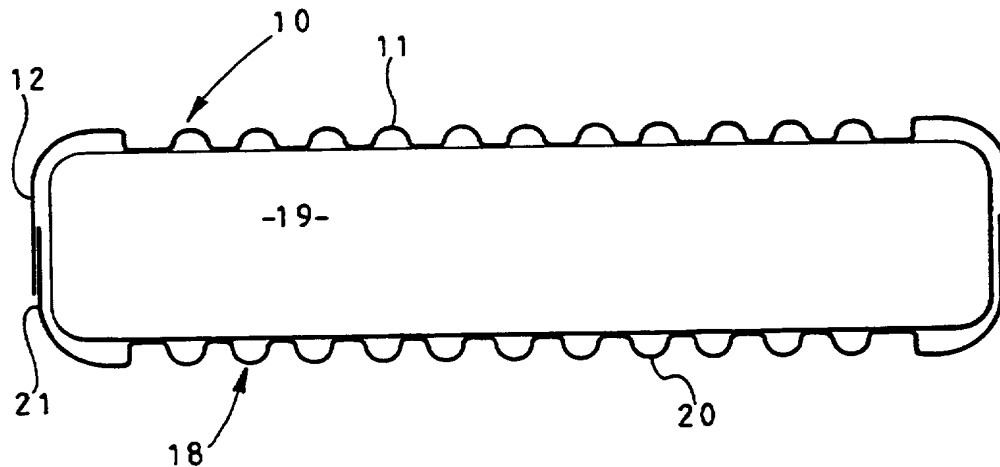
(52) UK CL (Edition O )  
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US 3459611 A

(58) Field of Search  
UK CL (Edition O ) A4M  
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## (54) MATTRESS COVER AND MATTRESS

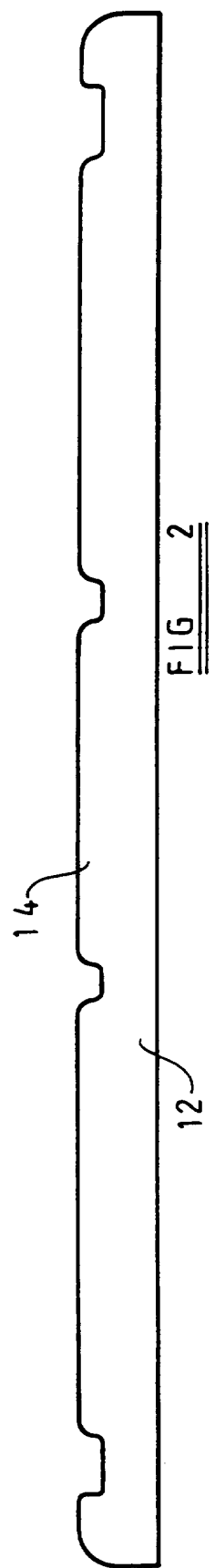
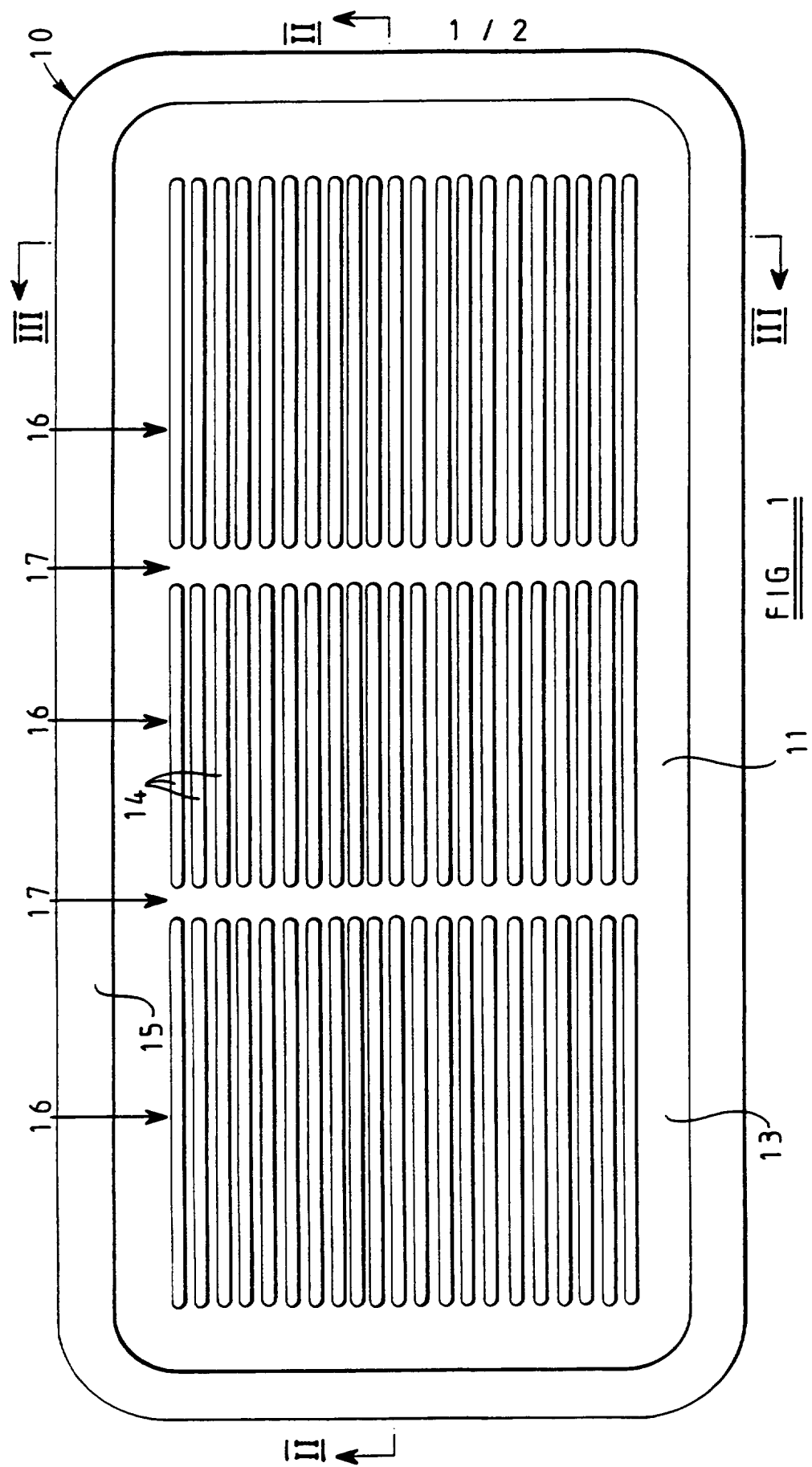
(57) A mattress top cover is formed as an integral moulding and comprises an upper surface 11 and a peripheral skirt 12 depending from the upper surface. The upper surface has a plurality of upwardly extending, self supporting, protrusions or a plurality of depressions so that air can circulate beneath the body of a person lying on the cover. A mattress having a top cover, a bottom cover 18 and a compressible inner core 19 is also disclosed.

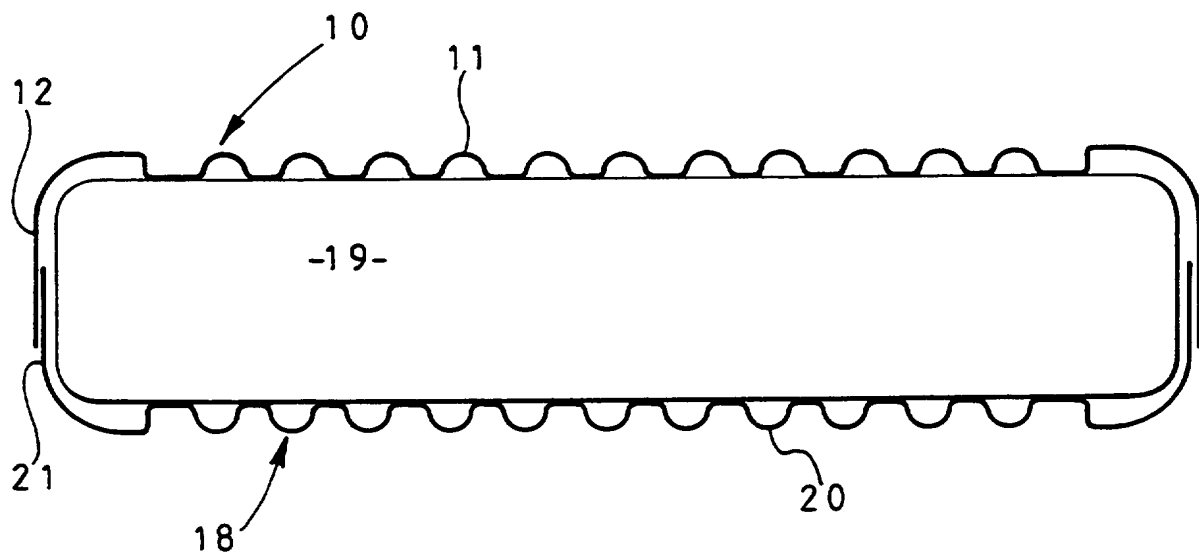
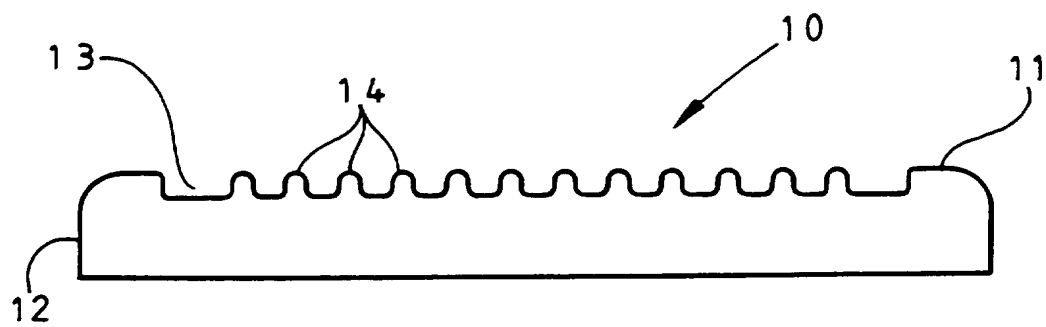


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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995





## MATTRESS COVERS AND MATTRESSES

This invention relates to mattress covers and mattresses.

5           Most mattresses have a porous covering material and are permeable. This means that the mattress interior may become contaminated and difficult to decontaminate. Contamination can result from penetration into the mattress of body wastes, spillage of milk or other liquids, air-borne bacteria etc. These penetrations can produce health hazards, especially in a mattress used in a hospital or by an infant,  
10   leading possibly to fatalities.

          Other mattresses have impervious coverings and can cause overheating through reflecting human body heat. This overheating also may become a health hazard, especially in a mattress used in a hospital, when bed sores may result, or by  
15   a child, when pools of trapped liquids may lead to fatal choking or other asphyxial deaths.

The present invention seeks to overcome these drawbacks.

20           According to a first aspect of the present invention, there is provided a mattress top cover formed as an integral moulding and comprising an upper surface and a peripheral skirt depending from the upper surface, the upper surface having a plurality of upwardly extending, self supporting, protrusions or a plurality of depressions so that air can circulate beneath the body of a person lying on the cover.

Preferably, the mattress cover is of uniform or substantially uniform thickness through.

Preferably, the protrusions or depressions define elongate channels which,  
5 more preferably, extend longitudinally of the cover.

Preferably, the cover has a plurality of upwardly extending, self supporting protrusions in the form of parallel, spaced apart ribs. In this case, the ribs preferably extend longitudinally of the cover and may be formed in two or more groups with a  
10 transversely extending gap between each pair of adjacent groups.

Preferably, the upper surface of the mattress top cover is recessed and the protrusions or depressions are provided in the recessed portion. In this case, the upper surface of the top mattress cover may have a single recess extending over  
15 substantially the entire area of the upper surface and surrounded by an upstanding rim.

Advantageously, the mattress top cover is stackable with like covers.

The top cover may be provided in combination with a bottom cover also  
20 formed as an integral moulding and having a lower surface and a peripheral skirt upstanding from the lower surface.

According to a second aspect of the invention there is provided a mattress comprising a top cover, a bottom cover and a compressible inner core, the top cover

being formed in accordance with the first aspect of the invention.

The bottom cover is preferably also formed as an integral moulding having a lower surface and a peripheral skirt upstanding from the lower surface. In this case,  
5 the upstanding skirt of the bottom cover may overlap the depending skirt of the top cover to enclose the compressible core.

The compressible core is preferably an inflatable air bag. Alternatively, the core may be formed of foam material or may include a bubble film filling.

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The invention will now be more particularly described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a plan view of one embodiment of a mattress top cover  
15 according to the first aspect of the invention,

Figure 2 is a section taken along line II - II of Figure 1 and

Figure 3 is a section taken along line III - III of Figure 1 and

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Figure 4 is a section through one embodiment of a mattress according to the second aspect of the invention.

Referring firstly to Figures 1 to 3 of the accompanying drawings, the

mattress top cover 10 shown therein is in the form of an impervious plastics or rubber moulding having a uniform or substantially uniform thickness. The moulding may be thermoformed or vacuum formed at elevated temperature and is typically of ABS or PVC.

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The mattress top cover 10 comprises an upper surface 11 and a peripheral skirt 12 depending from the upper surface 11. The upper surface 11 includes a recessed portion 13 provided with a plurality of upwardly extending, self supporting, protrusions 14 arranged to maintain a person lying on the cover in spaced relationship to the base of the recessed portion 13.

10

The recessed portion 13 is formed by a single recess extending over substantially the entire area of the upper surface 11 of the cover 10 and is surrounded by an upstanding rim 15.

15

The protrusions 14 are in the form of parallel, spaced apart ribs which extend longitudinally of the cover 10 and which are formed in at least two, and as shown three, groups 16 with transversely extending gaps 17 between each pair of adjacent groups 16. The ribs 14 define elongate channels therebetween.

20

When a person is lying on the cover 10 air can circulate between the ribs 14 and beneath the body of the person. This should prevent skin pores from becoming blocked, which could happen if the base of the recess 13 were to be flat. The recess 13 will also serve as a receptacle for excess liquid.

The moulding is semi-rigid and the gaps 17 between adjacent groups of ribs 14 give the upper surface some degree of flexibility thereby rendering the cover more comfortable to lie on.

5           In some circumstances, the protrusions 14 could be replaced by depressions which may be in the form of parallel spaced apart grooves which extend longitudinally of the cover 10 and which may be formed in at least two groups with a transversely extending gap between each pair of adjacent groups of grooves. These grooves define elongate channels extending longitudinally of the cover.

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As stated, the top cover 10 is impervious and will consequently protect any mattress below from becoming infected.

15           The top cover 10 is stackable with like covers for ease of storage and transportation.

The top cover 10 can be used on existing mattresses or as part of the mattress shown in Figure 4.

20           The mattress shown in Figure 4 comprises a top mattress cover 10, a bottom mattress cover 18 and a compressible inner core 19.

The bottom cover 18 is also formed as an integral plastics or rubber moulding having a lower surface 20 and a peripheral skirt 21 upstanding from the



lower surface 20. The upstanding skirt 21 of the bottom cover 18 overlaps the depending skirt 12 of the top cover 10 as a sliding fit to enclose the compressible core 19. The bottom cover 18 may be similar to the top cover 10, in which case the bottom cover 18, when inverted, may have a recess in its major surface with upstanding protuberances, such as ribs, or depressions, such as grooves. In this case, the bottom cover 18 may be used also as a top cover. Alternatively, the major surface of the bottom cover 18 may be flat. In any event, the bottom cover is preferably stackable with like covers.

10           The core 19 is preferably an inflatable airbag, although it may, alternatively, be formed of foam material or may include a bubble film filling.

Such a mattress is hygienic and easy to store and transport.

15           The above embodiments are given by way of example only and various modifications will be apparent to persons skilled in the art without departing from the scope of the invention. For example, the major surface of the or each cover need not, in some circumstances be recessed. In this case, the rim 15 will be coplanar with the remainder of the major surface of the cover, ignoring any protrusions or depressions.

CLAIMS

1. A mattress top cover formed as an integral moulding and comprising an upper surface and a peripheral skirt depending from the upper surface, the upper  
5 surface having a plurality of upwardly extending, self supporting, protrusions or a plurality of depressions so that air can circulate beneath the body of a person lying on the cover.
2. A mattress top cover as claimed in claim 1, wherein the mattress cover is  
10 of uniform or substantially uniform thickness throughout.
3. A mattress top cover as claimed in claim 1 or claim 2, wherein the protrusions or depressions define elongate channels.
- 15 4. A mattress top cover as claimed in claim 3, wherein the elongate channels extend longitudinally of the cover.
5. A mattress top cover as claimed in any one of the preceding claims, wherein the cover has a plurality of upwardly extending, self supporting protrusions in the  
20 form of parallel, spaced apart ribs.
6. A mattress top cover as claimed in claim 5, wherein the ribs extend longitudinally of the cover and are formed in two or more groups with a transversely extending gap between each pair of adjacent groups.

7. A mattress top cover as claimed in any one of the preceding claims, wherein the upper surface of the mattress top cover is recessed and the protrusions or depressions are provided in the recessed portion.
- 5 8. A mattress top cover as claimed in claim 7, wherein the upper surface of the top mattress cover has a single recess extending over substantially the entire area of the upper surface and surrounded by an upstanding rim.
9. A mattress top cover as claimed in any one of the preceding claims, which  
10 is stackable with like covers.
10. A mattress top cover as claimed in any one of the preceding claims, in combination with a bottom cover also formed as an integral moulding and having a lower surface and a peripheral skirt upstanding from the lower surface.
- 15 11. A mattress comprising a top cover, a bottom cover and a compressible inner core, the top cover being formed according to any one of claims 1 to 9.
12. A mattress as claimed in claim 11, wherein the bottom cover is formed as  
20 an integral moulding having a lower surface and a peripheral skirt upstanding from the lower surface.
13. A mattress as claimed in claim 12, wherein the upstanding skirt of the bottom cover overlaps the depending skirt of the top cover to enclose the compressible

core.

14. A mattress as claimed in any one of claims 11 - 13, wherein the compressible core is an inflatable airbag.

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15. A mattress as claimed in any one of claims 11 - 13, wherein the core is formed of foam material.

10 16. A mattress as claimed in any one of claims 11 - 13, wherein the compressible core includes a bubble film filling.

17. A mattress top cover substantially as hereinbefore described with reference to Figures 1 - 3 of the accompanying drawings.

15 18. A mattress substantially as hereinbefore described with reference to Figure 4 of the accompanying drawings.



Application No: GB 9424033.0  
Claims searched: 1-18

Examiner: John Graham  
Date of search: 10 January 1996

## Patents Act 1977 Search Report under Section 17

### Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): A4M

Int Cl (Ed.6): A47C

Other: Online database:WPI

### Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	US 3459611 A (JOSEPH) whole document	1

X Document indicating lack of novelty or inventive step  
Y Document indicating lack of inventive step if combined with one or more other documents of same category.

& Member of the same patent family

A Document indicating technological background and/or state of the art.  
P Document published on or after the declared priority date but before the filing date of this invention.  
E Patent document published on or after, but with priority date earlier than, the filing date of this application.